NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 119)

Question 1

Let f represent a function. If $f[9] = 4$, then there exists a knowable solution to the equation below.

$$y = 24 \cdot f\left[\frac{x}{3} - 5\right] - 49$$

Find the solution.

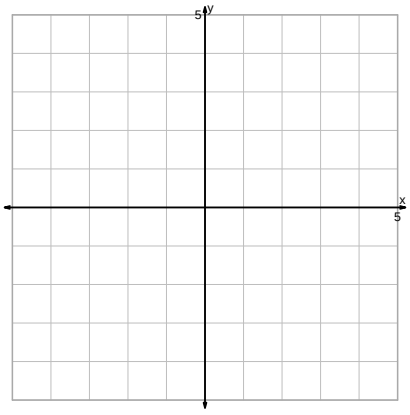
$x =$

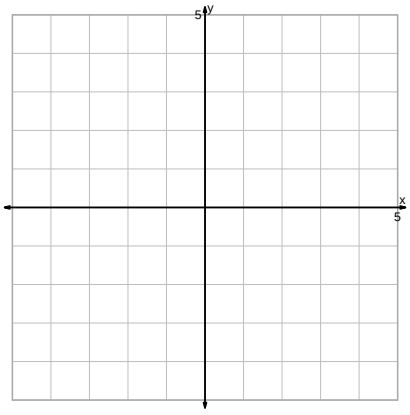
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

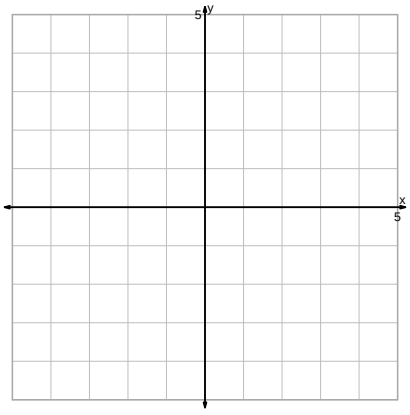
$y = \frac{x^2}{2}$

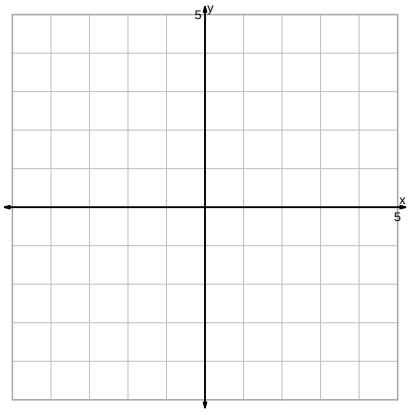




$y = \log_2\left(\frac{x}{2}\right)$

$y = \sqrt[3]{x-2}$

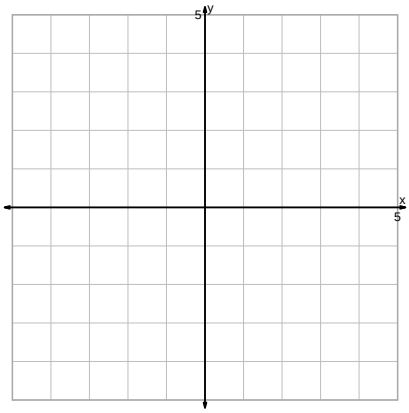


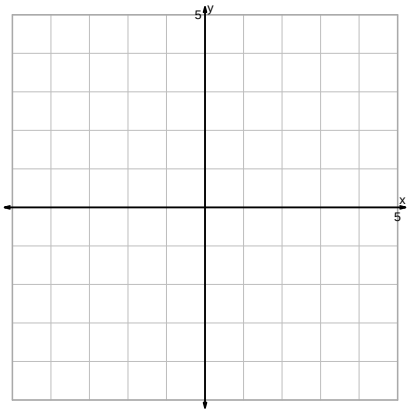


$y = -\sqrt{x}$

Question 2 continued...

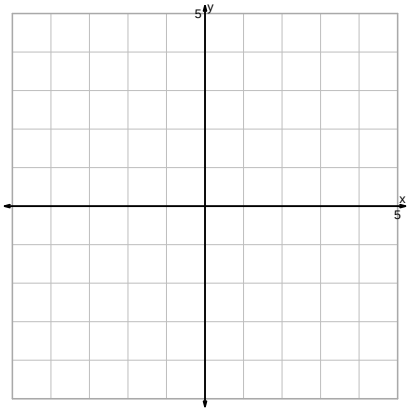
$y = 2 \cdot \sqrt[3]{x}$

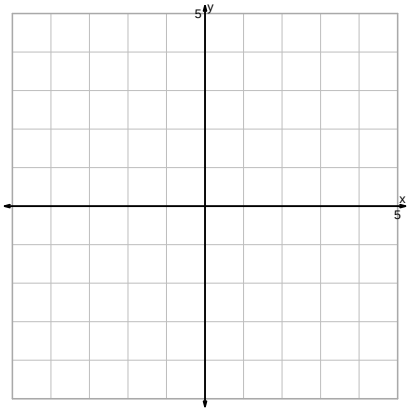




$y = \sqrt{2x}$

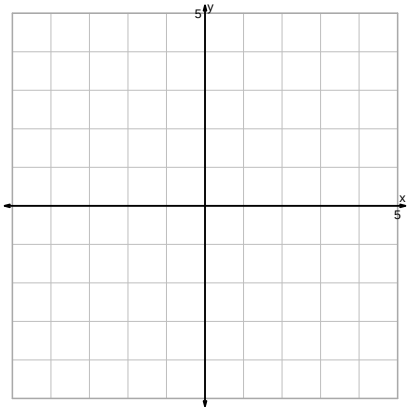
$y = 2^{x+2}$

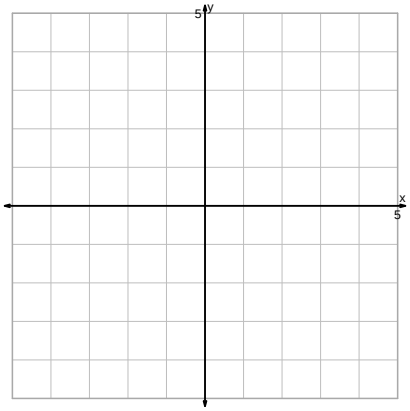




$y = 2^{-x}$

$y = x^3 + 2$

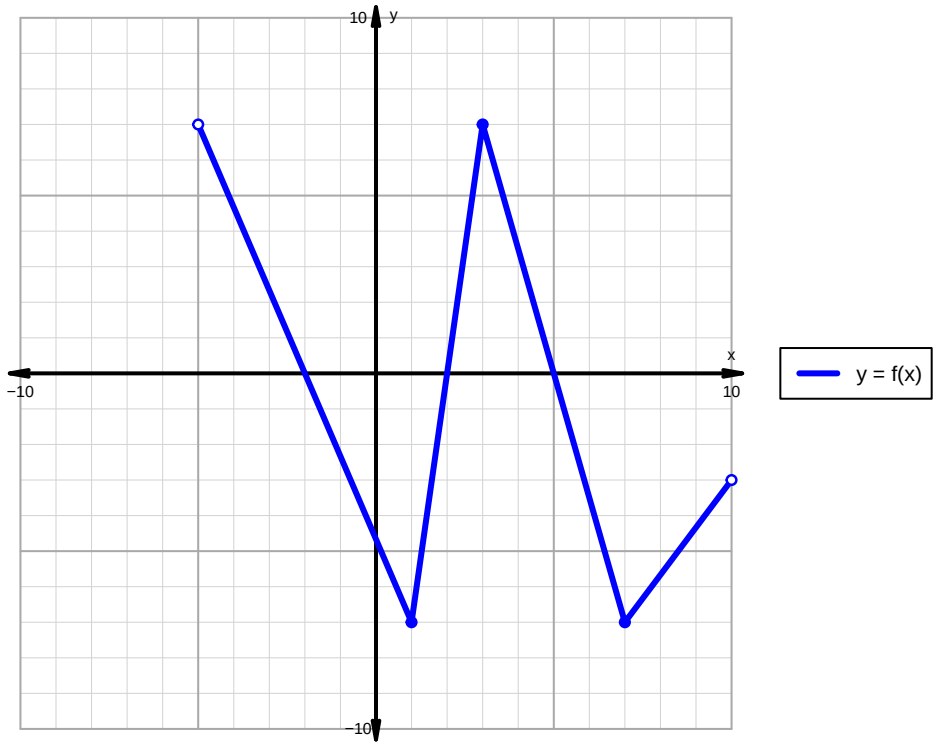




$y = x^2 - 2$

Question 3

A function is graphed below.



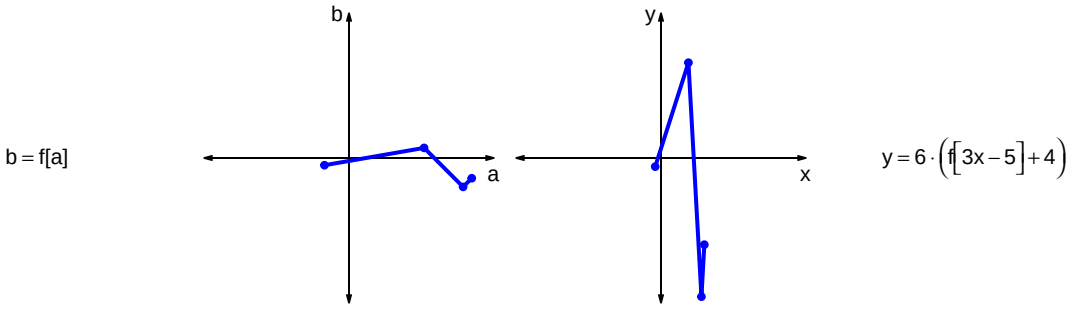
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 6 \cdot (f[3x - 5] + 4)$ are represented below in a table and on graphs.

a	b	x	y
-17	-5	-4	-6
52	7	19	66
79	-20	28	-96
85	-14	30	-60



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 6 \cdot (f[3x - 5] + 4)$?

Question 5

A parent square-root function is transformed in the following ways:

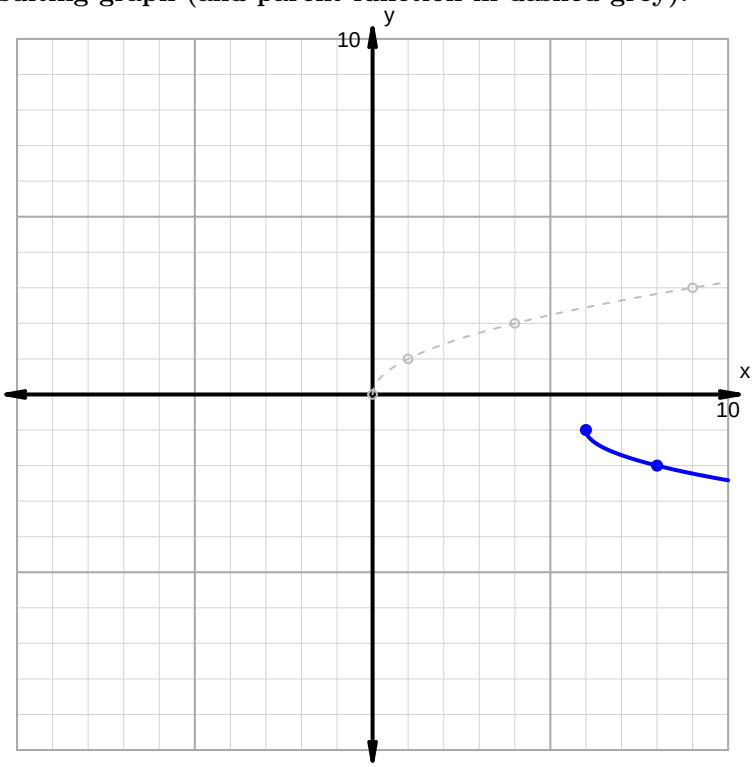
Horizontal transformations

1. Translate right by distance 3.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 1.

Resulting graph (and parent function in dashed grey):

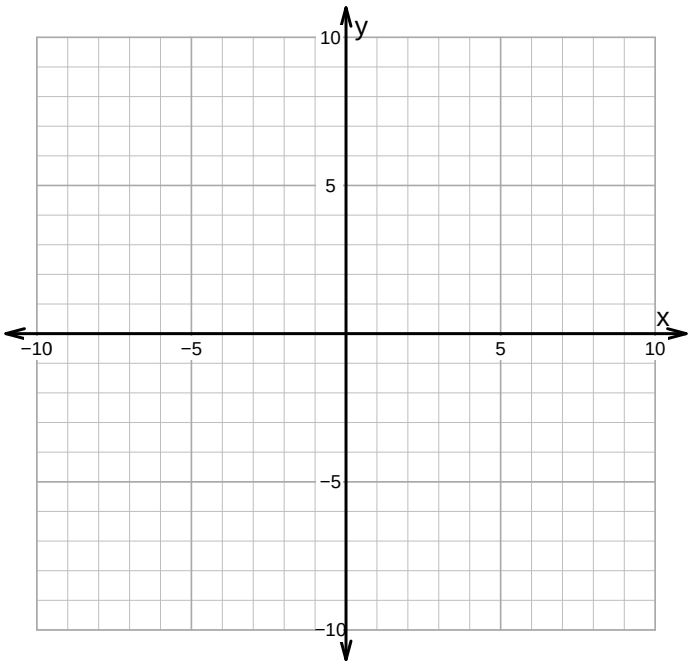


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x - 3| - 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	